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REMARKS

The Office action has been carefully considered. The Office action rejected claims 1-26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,553,222 to Milne et al. ("Milne") in view of U.S. Patent No. 6,714,201 to Grinstein et al. ("Grinstein"). Further, the Office action rejected claims 27 and 28 under 35 U.S.C. § 103(a) as being unpatentable over Milne in view of U.S. Patent 6,731,314 to Cheng et al. ("Cheng"). Further yet, the Office action rejected claims 29 and 32-36 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,986,675 to Anderson et al. ("Anderson") in view of Grinstein. Finally, the Office action rejected claims 30 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Anderson in view of Milne and in further view of Grinstein. Applicants respectfully disagree.

By present amendment, claims 1, 18, and 29 have been amended for clarification and not in view of the prior art. Applicants submit that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Prior to discussing reasons why applicants believe that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

The present invention is generally directed to a system for generating timing intervals for use with components that deal with computer graphics animation. In

general, high-level components typically maintain a set of clocks (sometimes referred to as timelines) related to animated objects in a scene, or media such as linear audio and/or linear visual media. These clocks often correspond to clock properties received from one or more application programs, and may be hierarchically arranged.

These clock properties may be modified by source events comprising interactive control events initiated by the application at run-time. Thus, the clocks are interactive, in that each clock can be individually started, paused, resumed and stopped at arbitrary times by the application, *e.g.*, in response to user input. In addition, new clocks can be added to the timing structure, and existing clocks can be removed.

One factor that typically influences the run-time of the timing update operation is the interaction of various synchronization rules. Because the time required to update the clocks is proportional to the number of clocks involved, the present invention converts a clock representation based on relational synchronization primitives to a representation based on independent intervals. As a result, to achieve predictable run-time behavior, a low-level timing engine is able to treat its clocks as independent entities. To this end, a high-level timing component may then generate an interval list for each clock based on a stored list of events (begin, pause, and so forth) and the associated synchronization primitives. The activation intervals are straightforward, non-overlapping segments that describe the time expressed by a given clock at different points in time, for example. The clocks may be processed via event lists at the higher level, from

which timing interval data may be generated and passed (*e.g.*, in data structures) to various low-level components. One or more low-level components may use the timing interval data to rapidly calculate (*e.g.*, per-frame) values corresponding to animation changes.

With this high-level / low-level hierarchy established, the lower-level component may calculate a current progress value for an object being animated, based on a current time within the current interval for any given frame. From the progress data, one or more property values of the animated object, such as current position, angle of rotation, color, and/or essentially any transformable property, may be rapidly interpolated for the current frame.

Any time that the user or some automated process interacts with the application program in a manner that affects an animation, such as to pause the contents of a displayed window that includes animations, or restart an animation, the higher level component re-computes the event list for the relevant clock and for any child clock or clocks thereof in the hierarchy. This re-computing operation may include adding implicit events to the event list, and/or designating some events as unused. The animation intervals are also recomputed from the event list and sent to the lower-level engine, which in turn consumes these intervals and adjusts each animated object's values accordingly for the display frame being constructed based on the updated animation interval list for that object.

Note that the above description is for example and informational purposes only, and should not be used to interpret the claims, which are discussed below.

Turning to the claims, amended claim 1 recites, generally, in a computing environment, a system comprising a first component that receives clock data from a program, an interval generation mechanism that computes interval data based on the clock data, wherein the interval data corresponds to a relative determination of time between a first event and a second event, and a second component that receives the interval data and determines an output based on the interval data and current time data, such that timing of the output is relative to both the interval data and the current time data.

The Office action rejected claim 1 as being unpatentable over Milne in view of Grinstein. Specifically, the Office action contends that Milne teaches a first component that receives clock data from a program. Fig. 10 and Fig. 5 of Milne are referenced. Further, the Office action contends that Milne teaches a second component that receives the interval data and determines an output. Again, Fig. 10 and Fig. 5 of Milne are referenced.

The Office action concedes that Milne fails to teach an interval generation mechanism that computes interval data based on the clock data, wherein the interval data corresponds to a relative determination of time between a first event and a second event. However, the Office action contends that Grinstein teaches this concept at Table 9 of column 25, citing the different spans of time between predicates. The Office action concludes that the recitations of claim 1 would have been obvious to a person skilled in the art at the time the invention was made because the added functionality that Grinstein brings to Milne is desirable. Applicants respectfully disagree.

To establish *prima facie* obviousness of a claimed invention, all of the claim recitations must be taught or suggested by the prior art; (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)), and "all words in a claim must be considered in judging the patentability of that claim against the prior art;" (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997). Moreover, if a modification would render a reference unsatisfactory for its intended purpose, the suggested modification / combination is impermissible. See MPEP § 2143.01.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. Not all of the recitations of claim 1 have be shown to be taught or suggested by the prior art of record. Furthermore, the cited and applied references may not be permissibly combined in the manner suggested by the Office action. Further yet, claim 1 has been amended to further distinguish that which applicants regard as their invention over the prior art. Each of these preceding statements is detailed further in the following paragraphs.

Milne is directed, generally, toward an external synchronization system that provides timing information to several multimedia systems simultaneously. In specific, the system of Milne allows several different devices, such as a device associated with player A and a device associated with player B, as generally described in Fig. 10, to be triggered by the same timing device. The timing device may be divided down via clock objects that provide appropriate timing data to

various multimedia devices (*i.e.*, a CD player, a MIDI keyboard, a computer-enabled music-playback device, *etc.*). Although Milne teaches a system for providing various timing data to various devices, Milne cannot distinguish between timing data and interval data as Milne is not even cognizant of the concept of interval data. The Office action correctly acknowledges that Milne is wholly and completely unaware of the concept of interval data.

As such, the Office action turns to the teachings of Grinstein. The cited and applied section of Grinstein teaches, generally, a number of predicates that may comprise a Boolean expression of a time concept. These predicates may, in turn, be used to schedule some kind of graphics event, such as motion and the like. The examples provided in the table include such concepts like before, after, at, during, *etc.* As such, the Office action contends that Grinstein teaches an interval generation mechanism that computes interval data based on the clock data, wherein the interval data corresponds to a relative determination of time between a first event and a second event.

Even assuming this contention to be true, Grinstein then still only teaches using this data, and only this data, to cause the second event. That, is the predicate of any Boolean expression in Table 9 is a final determination of any output. There is no disclosure in Grinstein of taking the result of the temporal predicates and then combining the result with data from a real-time clock to generate some form of output. In contrast, claim 1 recites a second component that receives the interval data and determines an output based on the interval data and current time data. That is, the output is based not only on just interval data

(which the Office action correlates to the temporal predicates of Table 9) but also current time data. No prior art of record teaches basing an output on both interval data and current time data.

Additionally, applicants submit that the Office action is impermissibly using hindsight reasoning in contending the rejection of claim 1. The Office action asserts that Milne teaches basing an output on current time data and that Grinstein teaches basing an output on interval data, and then contends that the combination of these teachings suggests basing an output on both interval data as well as current time data, *despite each reference lacking any suggestion of this*. The fact is, the Office action can only have reached this conclusion based on the suggestions of the present invention. As a matter of law, obviousness may not be established using hindsight reasoning obtained in view of the teachings or suggestions of the applicants. *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 311, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). To guard against the use of such impermissible hindsight, obviousness needs to be determined by ascertaining whether the applicable prior art contains any suggestion or motivation for making the modifications in the design of the prior art article in order to produce the claimed design. The mere possibility that a prior art teaching could be modified or combined such that its use would lead to the particular limitations recited in a claim does not make the recited limitation obvious, unless the prior art suggests the desirability of such a modification. See *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Furthermore, claim 1 has been amended to recite that timing of the output is relative to both the interval data and the current time data. Certainly neither Milne nor Grinstein can distinguish an output that is relative to both the interval data and the current time data. Each of these references necessarily teaches that any output is wholly relative to current time data alone (as is the case with Milne) or wholly relative to interval data (as is the case with Grinstein). For at least these reasons, applicants submit that claim 1 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 2-17, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. As discussed above, Milne and Grinstein, whether considered alone or in any permissible combination with each other or any other prior art of record, fail to teach or suggest all of the recitations of claim 1 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

Turning to the next independent claim, amended claim 18 recites, generally, in a computing environment, a method comprising receiving clock data, generating interval data based on the clock data, wherein the interval data corresponds to a relative determination of time between a first event and a second event, and causing output to be produced based on current time data and the interval data, such that timing of the output is relative to both the interval data and the current time data.

The Office action rejected claim 18 as being unpatentable over Milne in view of Grinstein. More specifically, the Office action cited the same sections of Milne and presented the same rationale for rejection as was presented previously with respect to claim 1. Applicants respectfully disagree.

Again, applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. Not all of the recitations of claim 18 have be shown to be taught or suggested by the prior art of record. Furthermore, claim 18 has been amended to further distinguish that which applicants regard as their invention over the prior art.

As discussed above, Milne teaches, generally, a system of method for using timing data to synchronize the occurrence of different events on different connected devices. However, Milne cannot determine anything about the occurrence of events not under the control of its system. That is, the timing system of Milne causes events to occur at specific points in time, but if an event occurs that is not specifically controlled by the timing system of Milne, Milne is wholly unaware of the event's occurrence. Thus, Milne is merely an example of an external synchronization device that is capable of providing non-relative timing information to several devices. The Office action correctly acknowledges that Milne is wholly and completely unaware of the concept of interval data.

As such, the Office action again turns to the teachings of Grinstein. The cited and applied section of Grinstein teaches, generally, a number of predicates that may comprise a Boolean expression of a time concept. These predicates may, in turn, be used to schedule some kind of graphics event, such as motion and

the like. The examples provided in the table include such concepts like before, after, at, during, *etc.* As such, the Office action contends that Grinstein teaches an interval generation mechanism that computes interval data based on the clock data, wherein the interval data corresponds to a relative determination of time between a first event and a second event.

Even assuming this contention to be somehow true, Grinstein then still teaches, using this data, and only this data, to cause the second event. That is, the predicate of any Boolean expression in Table 9 is a final determination of any output. There is no disclosure in Grinstein of taking the result of the temporal predicates and then combining the result with data from a real-time clock to generate some form of output. In direct contrast, claim 18 goes on to recite causing output to be produced based on current time data and the interval data. That is, the output is based not only on just interval data (which the Office action correlates to the temporal predicates of Table 9) but also current time data. No prior art of record teaches basing an output on both interval data and current time data.

In addition, applicants submit that the Office action is impermissibly using hindsight reasoning in contending the rejection of claim 18. The Office action asserts that Milne teaches basing an output on current time data and that Grinstein teaches basing an output on interval data and then contends that the combination of these teachings suggests basing an output on both interval data as well as current time data despite each reference lacking any suggestion of this. The fact is, the Office action has only reached this conclusion based on the suggestion of

the present invention. As a matter of law, obviousness may not be established using hindsight obtained in view of the teachings or suggestions of the applicants. *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 311, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

Furthermore, claim 18 has been amended to recite that timing of the output is relative to both the interval data and the current time data. Certainly neither Milne nor Grinstein can distinguish an output that is relative to both the interval data and the current time data. Each of these references necessarily teaches that any output is wholly relative to current time data alone (as is the case with Milne) or wholly relative to interval data (as is the case with Grinstein). For at least these reasons, applicants submit that claim 18 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 19-26, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 18 and consequently includes the recitations of independent claim 18. As discussed above, Milne and Grinstein, whether considered individually or in any permissible combination with each other or any other prior art of record, fail to teach or suggest all of the recitations of claim 18 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 18 noted above, each of these dependent claims includes additional patentable elements.

Turning to the next independent claim, claim 27 recites, generally, a computer-readable medium having stored thereon a data structure, the data structure comprising a first field having data indicative of begin time, a second field

having data indicative of an initial progress value, a third field having data indicative of an end time, a fourth field having data indicative of an final progress value, and wherein a current time between the begin time and the end time is used to interpolate a progress value between the initial progress value and the final progress value.

The Office action rejected claim 27 as being unpatentable over Milne in view of Cheng. More specifically, the Office action cited the same sections of Milne and presented the same rationale for rejection as was presented previously with respect to claims 1 and 3. The Office action acknowledges, however, that Milne does not teach a data field for data to interpolate a progress value. However, the Office action contends that Cheng does teach this recitation and that the combination of Milne and Cheng would be obvious to a person skilled in the art at the time the invention was made because smoother animation results. Applicants respectfully disagree.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. In contrast to law, not all of the recitations of claim 27 have be shown to be taught or suggested by the prior art of record. Specifically, as discussed above, interval data is a concept that is neither taught nor suggested by the prior art of record. In claim 27, interval data is expressed as an interpolated value between begin time and end time while taking into consideration current time and current progress. Milne, whether considered individually or in conjunction with any other prior art of record including Cheng, fails to teach or suggest the concept of interval data. This is acknowledged clearly in the rejections of claims 1 and 18.

Thus, the prior art of record cannot be construed to teach a data structure comprising fields for begin time, initial progress value, end time, and final progress value as used herein and consistent with the art. Applicants submit that claim 27 and dependent claim 28 are allowable over the prior art of record for at least the foregoing reasons.

Turning to independent claim 29, the claim generally recites, in a computing environment, a method comprising generating an event list based on scheduled events and at least one interactive event, computing an interval list based on the event list, determining a current interval in the interval list based on a time value, wherein the interval data corresponds to a relative determination of time between a first event and a second event, and processing data associated with the current interval to produce an output based on the time value, such that timing of the output is relative to both the current interval and the time value.

The Office action rejected claim 29 as being unpatentable over Anderson in view of Grinstein. More specifically, the Office action contends that Anderson teaches generating an event list based on scheduled events and at least one interactive event. Fig. 19 and column 28, lines 5-12 of Anderson are referenced. Further yet, the Office action contends that Anderson teaches determining a current interval in the interval list based on a time value. Fig. 18 of Anderson is referenced. Finally, the Office action contends that Anderson teaches processing data associated with the current interval to produce an output based on the time value. Again, Fig. 18 of Anderson is referenced.

The Office action acknowledges that Anderson fails to explicitly teach interval data and by implication the recitation of computing an interval list based on the event list, determining a current interval in the interval list based on a time value, wherein the interval data corresponds to a relative determination of time between a first event and a second event. However, the Office action contends that Grinstein teaches this concept. The Office action concludes that a person skilled in the art at the time the invention was made would have found the recitations of claim 29 obvious because organization of events in a list is desired. Applicants respectfully disagree.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. Not all of the recitations of claim 29 have be shown to be taught or suggested by the prior art of record. Furthermore, claim 29 has been amended to further distinguish that which applicants regard as their invention over the prior art.

Anderson is directed, generally, toward a process for generating 3-D graphics in a movie scene or computer-based animation sequence. More specifically, the cited sections of Anderson describe a number of events that may occur during an animation sequence and provides for start times with regard to these events. Thus, a character may run, walk, change costumes and faint according to a specific schedule of events. However, as conceded by the Office action, Anderson does not teach the concept of interval data.

As such, the Office action turns to the teachings of Grinstein. The cited and applied section of Grinstein teaches, generally, a number of predicates that may

comprise a Boolean expression of a time concept. The Office action contends that Grinstein teaches computing an interval list based on the event list, determining a current interval in the interval list based on a time value, wherein the interval data corresponds to a relative determination of time between a first event and a second event.

Even assuming this contention to be true, Grinstein then still only teaches using this data (and *only* this data) to cause the second event. That is, the predicate of any Boolean expression in Table 9 is a final determination of any output. There is no disclosure in Grinstein of taking the result of the temporal predicates and then combining the result with data from a real-time clock to generate some form of output. In contrast, claim 29 goes on to recite processing data associated with the current interval to produce an output based on the time value. That is, the output is based not only on just the current interval (which the Office action correlates to the temporal predicates of Table 9) but also the time value. No prior art of record teaches basing an output on both current interval data and time data.

Furthermore, claim 29 has been amended to recite that timing of the output is relative to both the current interval and the time value. Certainly neither Milne nor Grinstein can distinguish an output that is relative to both the current interval data and the current time data. Each of these references necessarily teaches that any output is wholly relative to current time value alone (as is the case with Milne) or wholly relative to current interval data (as is the case with Grinstein). Applicants

submit that claim 29 is allowable over the prior art of record for at least the foregoing reasons.

Applicants respectfully submit that dependent claims 30-36, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 29 and consequently includes the recitations of independent claim 29. As discussed above, Anderson and Grinstein, whether considered individually or in any permissible combination with each other or any other prior art of record, fail to teach or suggest all of the recitations of claim 29 and therefore these claims are also allowable over the prior art of record. Even when additional prior art is introduced, such as the case with Cheng and Milne, the prior art of record, whether considered as individual references or in any permissible combination with each other, still fails to teach or suggest the recitations of claim 29. In addition to the recitations of claim 29 noted above, each of these dependent claims includes additional patentable elements.

For at least these additional reasons, applicants submit that all the claims are patentable over the prior art of record. Reconsideration and withdrawal of the rejections in the Office action is respectfully requested and early allowance of this application is earnestly solicited.

In re Application of Blanco et al.
Serial No. 10/693,822

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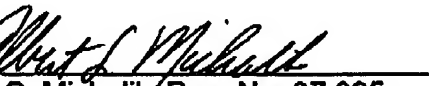
CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-36 are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,



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In re Application of Blanco et al.
Serial No. 10/693,822

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this Amendment, along with transmittal and facsimile cover sheet, are being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. 1.6(d) on the date shown below:

Date: August 28, 2006

Albert S. Michalik

4090 Second Amendment